

# The Relationship between V, D, P, T

October 14, 2015 2:19 PM

Density (D)  $\Rightarrow D = \frac{\text{mass}}{\text{volume}} = \frac{\# \text{ of atoms}}{\text{amount of space}}$

$\rightarrow$  how closely packed the molecules are in a given area

- the less space a volume of air takes up, the denser it is  $\therefore$  the higher the air pressure (as measured by a barometer)
- the warmer the air the further apart the molecules are, so the density is lower and  $\therefore$  the air pressure is lower
- humid air (lots of water vapour) weighs less than dry air  $\therefore$  the air pressure is lower

Dry air

78 N
21 O
1 other

↑  
heavier

N weigh 14  
O weigh 16

humid air

H <sub>2</sub> O
76 N
20 O
1 other

H weighs 1

↑  
lighter

H weighing 1, has replace N weighing 14

heavier

lighter

replace is a good

## In summary

- Falling barometer (P is dropping) means warmer, wetter weather
- high P area  $\rightarrow$  cool, dry (cold snap in winter)
- low P area  $\rightarrow$  warm, humid (rain)